Technifax

STERILIZING GROWING MEDIA

Sterilization and Inoculation of Growing Media

In the growing of fungi, yeasts, bacteria, etc. for the Food, Pharmaceutical and Biotechnology Industries, it is imperative that the producer (grower) begins with a sterile growing media and avoids any possibility of cross contamination of that media.

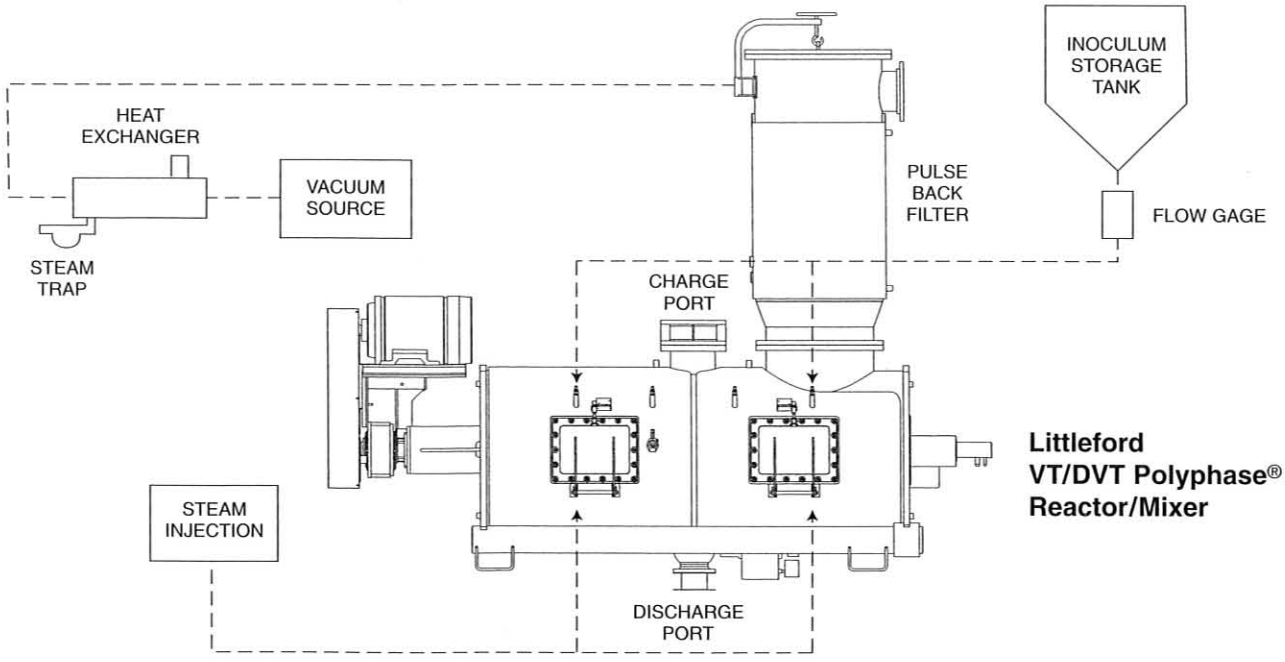
Typically the grower purchases a sterile growing media in pre-weighed small individual containers, creating the need to individually inoculate each container by hand. Subsequently the grower will manually mix in the inoculum and eventually mix all the small containers together to form one large batch.

These processes are quite labor intensive and lead to the real possibilities of cross contamination. In addition, this procedure does not allow the grower the flexibility and control they require to best satisfy their customers' needs.

Littleford Day Inc. has drawn upon its process technology and advanced Ploughshare® action to develop a vastly superior system for the sterilization of growing media and the inoculation of the media. The unique part of the Littleford system is that both the sterilization and the subsequent inoculation occurs in the same vessel, thus eliminating the possiblilty of cross contamination or contamination in different steps of the operation.

Typically the Littleford process follows these steps:

1. Media is placed in the Littleford Polyphase® Reactor/Mixer. Low speed agitation is initiated followed by direct steam injection into the media to raise the temperature and pressure within the mixer sufficiently to denature all organisms.
2. After an appropriate holding period, the mixer is evacuated and the batch is cooled and dried utilizing evaporative cooling.
3. The sterile media is cooled to the appropriate temperature and moisture level, inoculated, homogeneously mixed and delivered to the producers next step (i.e. fermentation, holding, packaging, etc.).



Littleford VT/DVT Polyphase® Reactor/Mixer

Littleford Day

Where Processing Ideas Become Reality

Technifax No.122

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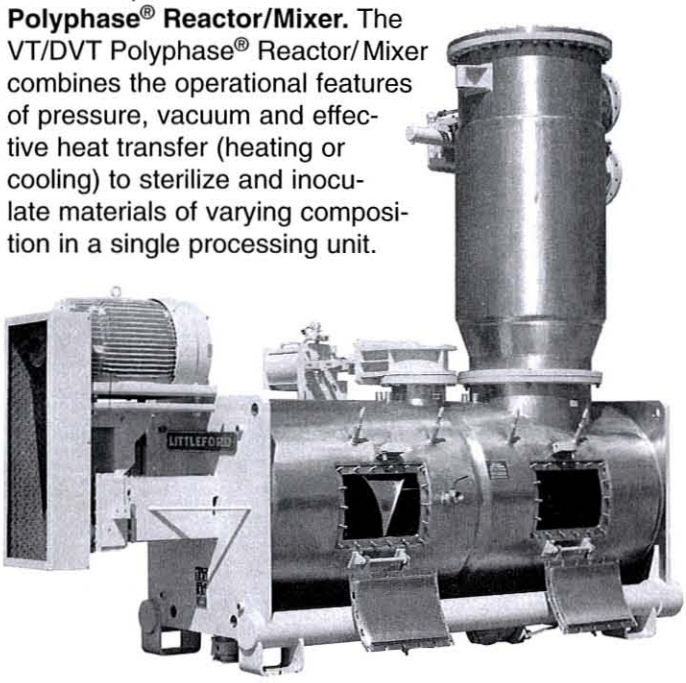
Major user benefits of the Littleford Ploughshare® system of sterilization and inoculation include being less labor intensive, controlling the moisture of the growing media, lessening the chance of cross contamination, handling different types of growing media, dispersing of inoculate, and providing the producer with more control and flexibility.

The Littleford equipment used to accomplish this advanced process is the **Littleford VT/DVT Polyphase® Reactor/Mixer.** The VT/DVT Polyphase® Reactor/ Mixer combines the operational features of pressure, vacuum and effective heat transfer (heating or cooling) to sterilize and inoculate materials of varying composition in a single processing unit.



The Littleford Reactor/Mixer operates according to the proven "fluidized bed" mixing principle, whereby the materials being processed are maintained in a mechanically fluidized or "suspended" state. This permits the mediums (gas-solid, liquid-solid or solid-solid) to achieve intimate, individualized, rapid contact with each other and the heat transfer surfaces. The Littleford VT/DVT Polyphase® Reactor/Mixer has been specifically engineered to maximize heat transfer coefficients, which are many times higher than those of traditional autoclave sterilizers. This advanced heat transfer technology allows fast, single-unit sterilization and inoculation of the growing media for fungi, yeasts and bacteria.

The Littleford Polyphase® Reactor/Mixer can be enhanced with an optional Pulse Back Filter to effectively handle the vapor stream created during cooling and drying. The Pulse Back Filter is used to filter the vapor stream from the reactor/mixer in order to prevent product carry-over into the condenser. The filter is heated slightly higher than the dew point of the vapor, thus preventing condensation. Filter bags of proper porosity are mounted over stainless steel cages and can easily be removed through the top section of the filter housing. A pneumatic pulse jet system provides continuous automatic bag cleaning down through a venturi at the top of the bag. Since this pneumatic shock wave clears only one row of bags at a time, there is no interruption of vapor flow through the filter. This provides a smoothly operating dust control system for your reactor/mixer.

We have found that the Littleford process will result in:

1. Controlled sterilization through effective/optimum heat transfer.
2. Improved cooling rates.
3. Increased efficiencies of sterilization and inoculation.
4. Single unit processing of the entire process.

The Littleford VT/DVT Polyphase® Reactor/Mixer is designed and constructed according to "GMP" and to meet or exceed FDA, 3A, USDA compliance as specified by the customer.

This proven Littleford technology has been applied to the most complex and difficult applications. Littleford Reactor/Mixers can be purchased in a variety of sizes to meet most production requirements. Littleford can interface with existing equipment or assist in supplying fully automated process systems.

For a free brochure or a detailed discussion, contact us at:

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